

CLAIMS

1. A delivery system for delivering a dental bleaching composition to teeth, comprising:

- a water-resistant barrier layer; and
- a dental bleaching composition adjacent to said barrier layer, said bleaching composition comprising:
 - a dental bleaching agent; and
 - polyvinylpyrrolidone as primary or sole thickening agent.

2. A delivery system for delivering a dental bleaching composition to teeth, comprising:

- a water-resistant barrier layer; and
- a dental bleaching composition adjacent to said barrier layer, said bleaching composition comprising:
 - a dental bleaching agent; and
 - polyvinylpyrrolidone having a molecular weight in a range of 1,000,000 to 1,500,000;

3. A delivery system for delivering a dental bleaching composition to teeth, comprising:

a water-resistant barrier layer; and

a dental bleaching composition adjacent to said barrier layer, said bleaching composition comprising:

a dental bleaching agent; and

at least one thickening agent in an amount of at least about 25% by weight of the dental bleaching composition, the thickening agent comprising polyvinylpyrrolidone.

4. A delivery system as recited in claims 1 or 2, wherein said polyvinylpyrrolidone has a concentration of about 5-40% by weight of said dental bleaching composition.

5. A delivery system as recited in claims 1, 2 or 3, wherein said polyvinylpyrrolidone has a concentration of at least about 25% by weight of said dental bleaching composition.

6. A delivery system as recited in claims 1 or 3, wherein said polyvinylpyrrolidone has a molecular weight in a range of about 90,000 to 1,500,000.

7. A delivery system as recited in claims 1 or 3, wherein said polyvinylpyrrolidone has a molecular weight in a range of 1,000,000 to 1,500,000.

8. A delivery system as recited in claims 2 or 3, wherein said polyvinylpyrrolidone is the sole or primary thickening agent.

9. A delivery system as recited in claims 1, 2 or 3, wherein said dental bleaching agent is a peroxide.

10. A delivery system as recited in claim 1, 2 or 3, wherein said dental bleaching agent is selected from the group consisting of hydrogen peroxide, carbamide peroxide, sodium perborate, and sodium percarbonate.

11. A delivery system as recited in claim 1, 2 or 3, wherein said dental bleaching agent is formulated so as to release hydrogen peroxide as primary or sole bleaching agent when the dental bleaching composition is applied to a person's teeth throughout the duration of a desired treatment period.

12. A delivery system as recited in claims 1, 2 or 3, said dental bleaching composition further comprising water.

13. A delivery system as recited in claim 1, 2 or 3, wherein said dental bleaching composition comprises a liquid component selected from the group consisting of water, glycerin, propylene glycol, liquid polyethylene glycol, liquid polypropylene glycol, ethanol, and combinations thereof.

14. A delivery system as recited in claim 13, wherein said liquid component has a concentration of at least 0.1% by weight of the dental bleaching composition.

15. A delivery system as recited in claim 13, wherein said liquid component has a concentration from 0.2 – 80% by weight of the dental bleaching composition.

16. A delivery system as recited in claim 13, wherein said liquid component has a concentration from 10 – 50% by weight of the dental bleaching composition.

17. A delivery system as recited in claim 13, wherein said dental bleaching composition is a viscous gel.

18. A delivery system as recited in claims 1, 2 or 3, said dental bleaching composition further comprising at least one component selected from the group consisting of fumed silica, xanthan gum, pectin, guar gum, hydroxyl propyl cellulose, gelatin, natural gums, polyethylene glycol, polypropylene glycol, carboxypolymethylene, and water soluble waxes.

19. A delivery system as recited in claims 1, 2 or 3, wherein said dental bleaching composition is a one-part composition.

20. A delivery system as recited in claims 1, 2 or 3, said dental bleaching composition further comprising at least one desensitizing agent.

21. A delivery system as recited in claims 1, 2 or 3, wherein said barrier layer is a flexible strip of material having a thickness of less than about 1 mm.

22. A delivery system as recited in claim 21, said flexible strip of material comprising at least one polymer selected from the group consisting of polyethylene, ethylvinylacetate, ethylvinyl alcohol, polyesters, and fluoroplastics.

23. A delivery system as recited in claim 21, said flexible strip of material comprising rounded corners.

24. A delivery system as recited in claim 21, said flexible strip of material comprising a plurality of pockets.

25. A delivery system as recited in claim 21, said flexible strip of material having a flexural stiffness of less than about 5 g/cm as measured on a Handle-O-Meter, model #211-300 as per test method ASTM D2923-95.

26. A delivery system as recited in claim 25, said flexible strip of material having a flexural stiffness from about 0.1 g/cm to about 1 g/cm.

27. A delivery system as recited in claim 21, said dental bleaching composition adhesively attaching said flexible strip of material to a person's teeth without substantial slippage when the delivery system is in use.

28. A delivery system as recited in claim 21, further comprising a release liner on a side of the dental bleaching composition opposite said flexible strip of material.

29. A delivery system as recited in claims 1, 2 or 3, said barrier layer comprising a dental tray.

30. A dental bleaching strip for delivering a dental bleaching composition to teeth, comprising:

a water-resistant flexible strip of material; and

a one-part dental bleaching composition adjacent to said flexible strip, said bleaching composition comprising:

a peroxide bleaching agent;

water in an amount of at least 0.1% by weight of the dental bleaching composition; and

polyvinylpyrrolidone as primary or sole thickening agent.

31. A dental bleaching strip as recited in claim 30, wherein said water has a concentration of 0.2 – 80% by weight of the dental bleaching composition.

32. A dental bleaching strip as recited in claim 30, wherein said water has a concentration of 10 – 50% by weight of the dental bleaching composition.

33. A dental bleaching strip as recited in claim 30, said dental bleaching composition further comprising at least one of propylene glycol, polyethylene glycol, polypropylene glycol, or ethanol.

34. A dental bleaching strip for delivering a dental bleaching composition to teeth, comprising:

a water-resistant flexible strip of material; and

a dental bleaching composition adjacent to said flexible strip, said bleaching composition comprising:

a peroxide bleaching agent; and

at least one thickening agent in an amount of at least about 25% by weight of the dental bleaching composition, the thickening agent comprising polyvinylpyrrolidone.

35. A dental bleaching strip as recited in claim 34, said dental bleaching composition comprising at least 0.1% of a liquid component.

36. A dental bleaching strip as recited in claim 35, said liquid component comprising water.

37. A dental bleaching strip as recited in claim 35, said liquid component comprising at least one of propylene glycol, polyethylene glycol, polypropylene glycol, or ethanol.

38. A dental bleaching strip as recited in claim 34, said polyvinylpyrrolidone comprising at least about 25% by weight of the dental bleaching composition.

39. A dental bleaching strip for delivering a dental bleaching composition to teeth, comprising:

a water-resistant flexible strip of material; and

a one-part dental bleaching composition adjacent to said flexible strip,

said bleaching composition comprising:

a peroxide bleaching agent;

water; and

at least one thickening agent comprising polyvinylpyrrolidone,

said dental bleaching composition adhesively attaching said flexible strip of material to a person's teeth without substantial slippage when the dental bleaching strip is in use.

40. A dental bleaching strip as recited in claim 39, said polyvinylpyrrolidone comprising at least about 25% by weight of the dental bleaching composition.

WORKMAN NYDEGGER
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111